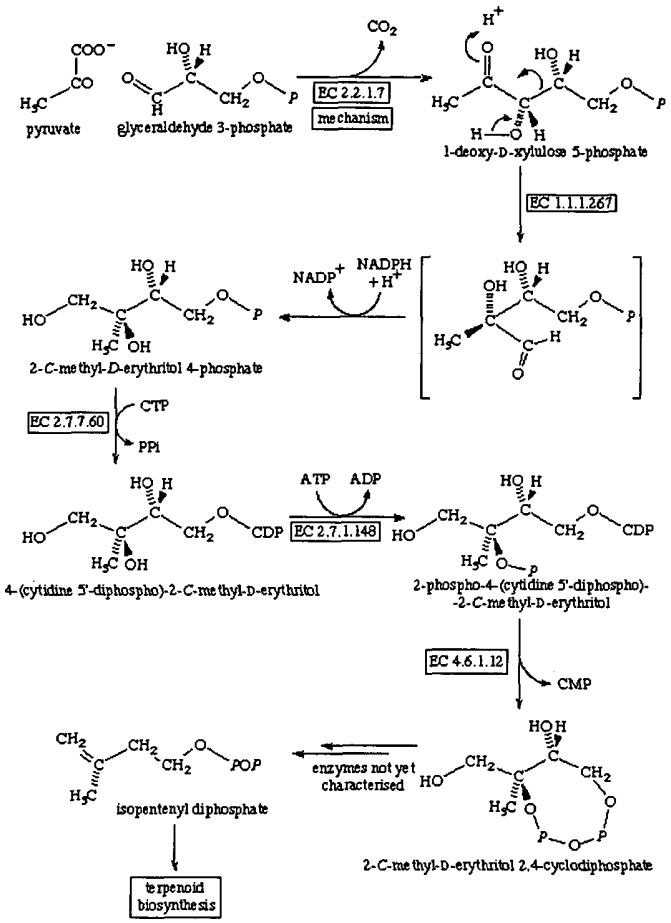
# Non-Mevalonate Terpenoid biosynthesis

When cursor points to a box further details will be displayed in the status window below. If you click on the box you will change to appropriate reaction scheme or enzyme specification.




DXP Reductoisomerase

See also separate file for mechanism of EC 2.2.1.7 1-deoxy-D-xylulose 5-phosphate synthase

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isopentenyl diphosphate to terpenoid biosynthesis
EC 1.1.1.267 1-deoxy-D-xylulose-5-phosphate reductoisomerase
EC 2.2.1.7 1-deoxy-D-xylulose 5-phosphate synthase (formerly EC 4.1.3.37)
EC 2.7.1.148 4-(cytidine 5'-diphospho)-2-*C*-methyl-D-erythritol kinase
EC 2.7.7.60 2-*C*-methyl-D-erythritol 4-phosphate cytidylyltransferase
EC 4.6.1.12 2-*C*-methyl-D-erythritol 2,4-cyclodiphosphate synthase

**IUBMB Enzyme Nomenclature**

# EC 1.1.1.267

**Common name:** 1-deoxy-D-xylulose-5-phosphate reductoisomerase

**Reaction**: 2-*C*-methyl-D-erythritol 4-phosphate + $NADP^+$ = 1-deoxy-D-xylulose 5-phosphate + NADPH + $H^+$

For diagram click here.

**Other name(s)**: DXP-reductoisomerase; 1-deoxy-D-xylulose-5-phosphate isomeroreductase; 2-*C*-methyl-D-erythritol 4-phosphate (MEP) synthase

**Systematic name**: 2-*C*-methyl-D-erythritol-4-phosphate:$NADP^+$ oxidoreductase (isomerizing)

**Comments**: The enzyme requires $Mn^{2+}$, $Co^{2+}$ or $Mg^{2+}$ for activity, with the first being most effective. The enzyme from several eubacteria, including *E. coli*, forms part of an alternative nonmevalonate pathway for terpenoid biosynthesis (for diagram, click here).

**Links to other databases**: BRENDA, EXPASY, KEGG, WIT, CAS registry number:

**References**:

1. Takahashi, S., Kuzuyama, T., Watanabe, H. and Seto, H. A 1-deoxy-D-xylulose 5-phosphate reductoisomerase catalyzing the formation of 2-*C*-methyl-D-erythritol 4-phosphate in an alternative nonmevalonate pathway for terpenoid biosynthesis. *Proc. Natl. Acad. Sci. USA* 95 (1998) 9879-9884. [PMID: 9707569]

[EC 1.1.1.267 created 2001]

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# WEST Search History

DATE: Tuesday, April 29, 2003

| Set Name side by side | Query | Hit Count | Set Name result set |
|---|---|---|---|
| | *DB=USPT,PGPB; PLUR=YES; OP=ADJ* | | |
| L12 | (phosphate adj3 reductoisomerase) and (inhib$ modulat$ or activat$) and @ad<20000809 not l6 | 5 | L12 |
| L11 | L1 and (inhib$ modulat$ or activat$) | 33 | L11 |
| | *DB=JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ* | | |
| L10 | L9 and @pd<20000809 | 8 | L10 |
| L9 | L7 and (inhib$ or modulat$ or activat$) | 15 | L9 |
| L8 | L7 and (inhib$ modulat$ or activat$) | 0 | L8 |
| L7 | reductoisomerase | 16 | L7 |
| | *DB=USPT,PGPB; PLUR=YES; OP=ADJ* | | |
| L6 | L5 and @ad<20000809 | 9 | L6 |
| L5 | L4 or l3 | 17 | L5 |
| L4 | L1 same (modulat$ or activat$) | 7 | L4 |
| L3 | L1 same inhib$ | 14 | L3 |
| L2 | L1 same inhib? | 0 | L2 |
| L1 | reductoisomerase | 51 | L1 |

END OF SEARCH HISTORY